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SUMMARIES OF RESEARCH AND DEVELOPMENT ACTIVITIES PERFORMED IN RACINE R/I UNITS DURING THE 1966-67 SCHOOL YEAR. (TITLE SUPPLIED).

BY- QUILLING, MARY R.
WISCONSIN UNIV., MADISON

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THE ACTIVITIES OF THE RACINE, WISCONSIN, R/I UNITS INCLUDED A CREATIVITY STUDY, LANGUAGE DEVELOPMENT EXPERIMENTS, TWO EXPERIMENTS IN INDIVIDUALIZING HANDWRITING, AN ANALYSIS OF THE EFFECTS OF INCREASED HOME-SCHOOL CONTACT ON PARENT ATTITUDE AND STUDENT ACHIEVEMENT, THREE EXPERIMENTS IN INDIVIDUALIZED ARITHMETIC INSTRUCTION, AND RESEARCH AND DEVELOPMENTAL ACTIVITIES TO DEVISE INSTRUCTIONAL PRINCIPLES FOR MOTIVATING LEARNING. THE PARTIAL RESULTS OF SOME OF THESE EXPERIMENTS ARE GIVEN. (LB)

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WISCONSIN RESEARCH AND DEVELOPMENT CENTER FOR COGNITIVE LEARNING

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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THE UNIVERSITY OF WISCONSIN
1404 REGENT STREET
MADISON, WISCONSIN 53706
PHONE 262-4901 / AREA 608

ED016012

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TO : Central Staff and R & I Unit Personnel in the Racine Unified School District

FROM: Mary Quilling, R & D Center

Attached are summaries of research and development activities performed in Racine R & I Units during the 1966-67 school year. Several particularly interesting studies undertaken in R & I Units in other school systems are included as well.

These studies will be discussed in greater detail at the December fifth meeting. It is hoped that you will have time to acquaint yourself with the results prior to that time, so that interesting questions may be formulated.

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CARNEGIE CREATIVITY STUDY

(Cooperatively undertaken by the Wisconsin Research and Development Center for Cognitive Learning, and the Institute of Personality Assessment and Research, University of California, Berkeley.)

Schools

Forty-four fifth grade classes in the Racine, Wisconsin, Unified School District No. 1.

Purpose

The major purpose of this study was to investigate the extent to which increments in the thinking and problem-solving performance of fifth-grade students could be produced by the use of self-instructional programmed lessons (The Productive Thinking Program, Series One: General Problem Solving) which were designed to teach skills and strategies of creative thinking independent of any specific subject field. The study also investigated the relationship between productive thinking abilities and certain characteristics of the learn (IQ and sex), and the relationship between level of productive thinking performance and the extent to which overall classroom "environment" was judged to facilitate creative thinking.

Results

Results from 44 fifth-grade classes showed that The Productive Thinking Program produced statistically significant increments in thinking and problem-solving performance on a wide variety of productive thinking measures. These instructional benefits occurred for virtually all types of students (regardless of sex or general level of IQ), and were especially marked for students in classrooms having environments which were judged to provide relatively little support and encouragement for the development of productive thinking. These effects were obtained when the materials were used as an entirely self-contained, self-instructional program; considerably greater educational benefits could be expected under conditions where the materials are reinforced by active teacher participation.

Quite apart from the effects of instructional materials, performance on the productive thinking measures used in this study was significantly related to sex (girls generally scoring higher than boys) and showed a strong and positive relation to IQ.

EXPERIMENTS IN LANGUAGE DEVELOPMENT PROGRAMS
FOR THE DISADVANTAGED

Treatments

School	Grade	Control	Experimental
Franklin	K	Playtime activities	1)Overdose-large group 2)Overdose-small group
Franklin	2	Health Unit	Oral and written language experiences

Kindergarten Experimental Treatment

--"Overdose"--In "overdose" sessions, held while control children were playing, experimental pupils had many first-hand experiences which were drawn upon in subsequent language activities. Materials such as the Peabody Vocabulary Kit and Languagemaster were used. Visitors with whom the children could identify, told of their work, and pupils acted it out, sometimes wearing appropriate garb, such as a chef's hat or fireman's boots. Audio and visual discrimination received particular attention.

Second-Grade Experimental Treatment

Primary emphasis--oral experiences such as choral speaking, creative dramatics, play acting.

Secondary emphasis--written expression starting with simple sentence writing.

Data Gathered

Franklin (K)--Mid-experimental and final scores on a teacher-constructed vocabulary and comprehension test.

Franklin (2)--Pre- and postexperimental writing samples were rated for form, number of words, and improvement, and an attitude inventory was administered. Tape recorded, oral presentations were also collected and rated at the beginning and end of the experiment.

Results

For the Kindergarten, the experimental groups performed significantly better than the control group. While those pupils in the small experimental group had higher scores than those in the large experimental group, the difference between the two experimental groups was not significant.

For the second grade unit no significant differences were found on any of the measures.

TWO EXPERIMENTS IN INDIVIDUALIZING HANDWRITING

Experimental and Control Treatments

School	Grade	Traditional	Individualized no commercial materials	Commercial (SRA) Individualized
Giese	3	Control	Experimental	Experimental
Giese	4	Control	Experimental	Experimental

Traditional--formal group method. This is the approach outlined by the Racine district's Handbook of Handwriting Practices. The third grade used Adventure in Handwriting--Petersen Directed Handwriting, published by MacMillen Company; The Correlated Handwriting Series, by F. N. Freeman, Zaner-Bloser publisher, was used by the fourth level pupils.

Individualized--no commercial materials. This treatment was basically a diagnostic-corrective program; and, as such, no commercially prepared program was used. The techniques in a large part were determined on the basis of teacher judgment about the needs of the individual subjects. For example, the teacher would circle writing errors and these determined diagnostic treatment in subsequent lessons.

Commercial Individualized. This treatment was implemented by using The Penskill Individualized Handwriting Skills Program, by R. G. Larson, published by Science Research Associates, Inc. Much responsibility rested with the individual pupil under this approach.

Data Gathered

Data consisted of handwriting samples, pre- and post-experimental, gathered under different conditions. Both judges' ratings and speed were analyzed.

Results

Significant effects were noted in favor of the experimental groups at the third grade level only on analyses of speed data. However, the experimental groups at both grade levels had a higher mean rating, though not significantly so, than the control group writing under the normal condition.

Consideration of the following table of means in which the Giese third and fourth grade results are compared with those of pupils in a statewide sample, indicates that although few significant differences were found, the performance of the typical Giese pupils is somewhat better than that of the typical Wisconsin fourth grader.

	Giese 3	Giese 4	Statewide Sample
Traditional	3.713	3.050	3.075*
Individualized--no commercial material	3.901	3.331	
Commercial individualized	3.979	3.522	

*Presumably most fourth graders in the state are taught by traditional, formal group methods. The ratings, however, represent a wider range of treatments, and especially materials, than is implied by the Giese traditional treatment.

Implications

Since students in the individualized programs performed somewhat (not significantly) better than pupils in the traditional programs, individualization in handwriting should be given further consideration. The evidence is not strong enough to recommend that individualized methods replace traditional methods.

THE EFFECTS OF INCREASED HOME-SCHOOL CONTACT ON PARENT ATTITUDE AND STUDENT ACHIEVEMENT

School

Howell, Grade 5.

Treatments

Subjects were randomly assigned to the two treatments. A brief description of the treatments follows:

Experimental--The first group of parents were visited in their homes, asked to be part of a parent study group, given assistance with their child's homework, given an opportunity to participate in school activities, and had a teacher visit with each report card.

The contact between the home and the school was primarily undertaken by the Unit leader. Others assisting with this task were a home-school parent from the community, a social worker, teachers of the Unit, and the principal. The teachers and the Unit leader held a conference with each of the parents of the experimental group. These parents also received home work guide sheets and immediate notification in case of an outstanding learning or behavior change. This was accomplished by phone call, home visit, or personal note.

Control--The second group of parents were contacted by the school in accordance with normal procedure.

Data Gathered

A parent questionnaire was developed by the Unit staff and sent home both fall and spring. Additional data used to evaluate the success of this program included field-test data from fall and spring and administration of the Stanford Achievement Test.

Results

The analysis performed on scores from the parent questionnaire showed that the adjusted scores of experimental parents were significantly higher than those of control parents. Adjustment was made for initial attitude. Unadjusted means are presented in the following table:

Group	Fall	Spring
Control	87.36	85.64
Experimental	85.24	90.53

A multivariate analysis of covariance was performed on the ten subtests of the Stanford Achievement Test using IQ as a covariate. Experimental subjects performed significantly better overall than did control pupils. There were substantial differences between the adjusted scores of the two groups in language, arithmetic computation, arithmetic applications and science, all in favor of the experimental group.

Discussion

The experimental treatment seems to have been effective both in motivating student performance and in making parents' attitudes toward the school more positive. It is possible, as well, that such a program had other non-measured benefits, such as positively changing student attitudes. The effects of any public relations program, of course, may also extend to performance of other pupils in the family. That such a time-consuming program was well worth the effort of the many community personnel who contributed is evident.

THREE EXPERIMENTS IN INDIVIDUALIZATION AND MOTIVATION OF ARITHMETIC INSTRUCTION

Experimental and Control Treatments

School	Grade	No folder or conference	Folder only	Folder and conference
Howell	1		Control	Experimental
Stephen Bull	1-2	Control		Experimental
Stephen Bull	3	Control	Experimental	

No folder or conference. This treatment was given the control group in two instances. Arithmetic instruction was the same as that received by experimental subjects except that the type of informative feedback and reinforcement inherent in the folder or conference procedure were not provided.

Folder only. Youngsters in this treatment group kept folders on which they could chart their progress by coloring in a square when they had demonstrated mastery of a skill or concept. It was hypothesized that this procedure, by which a child could evaluate his past accomplishments, would motivate his future performance.

Folder and conference. A weekly five-minute individual teacher-pupil conference was used in conjunction with the folder. It was thought that the personal attention given by an adult might be additionally reinforcing. The feedback and motivating aspects of the folder procedure might also be more effectively implemented.

Data Collected

Scores on a teacher-constructed test of the work covered during the experiment. Additionally, the number of concepts mastered (or squares colored) was recorded at Howell.

Results

Since results were mixed, conclusions are not clear-cut and further investigation is needed.

At Howell significant differences in favor of the experimental group--that using folders and conferring individually with the teacher--were found. The control group used folders but did not have teacher conferences.

No significant differences were found for the groups in the mixed primary (1-2) Unit at Stephen Bull. Means did favor the experimental group, however. (Separate analyses had to be performed for first and second year pupils, and the small number in each group made the analysis less sensitive to real differences.)

The folder-no folder comparison was not significantly better for all children in the third grade Unit at Stephen Bull, but was significantly better for older children.

Interpretation

In all Units, the mean of the experimental group exceeded the mean of the control group. In one instance there was significant difference between the two groups. In another instance, the experimental procedure was significantly better for older children. The significance tests of the other Unit are best interpreted as inconclusive.

The results suggest that the folder-conference procedure works well for primary children, and that the folder only approach may be suitable as they mature. The experiments did not answer the question of folder-no folder for young primary children; or conference-no conference for older primary children. An experiment in which all three of the treatments of interest were carried on should be performed at several age levels. Investigations of different procedures to follow in using the folder or holding the conferences might also be investigated.

RESEARCH AND DEVELOPMENTAL ACTIVITIES ON INSTRUCTIONAL PRINCIPLES FOR MOTIVATING LEARNING

I. Instructional Principle

Design and execute a system of rewards.

School

Stephen Bull, Grade 3.

Procedure

Concrete rewards were used systematically to reinforce pupils' reading of library books as follows:

2 books -- Batman pencil
5 books -- Eraser
10 books -- Box of crayons
15 books -- 2 Tiny Golden books
20 books -- Ball point pen
30, 40 books -- Puzzle, etc.

Individual conferences were conducted weekly by volunteer aides from local women's organizations, at which time the child reported on and read from books he had completed. The Unit leader also held individual conferences and received written and illustrated reports. Each child received from 5 to 15 minutes of individual attention when making a report.

Data Gathered

A record of the number of books read was kept. Gates-MacGinitie Reading Tests, Primary C, were administered in February and in April. Stanford Achievement Test reading scores were obtained in March. Scores from October of second grade were available for comparative purposes.

Results

Statistical analyses were not performed because there was not an experiment.

The number of books read was impressive. The 72 pupils, in a period of eight months, reported on 2,074 books, the median being 21. Nine children read over 50 books, three more than 70. Only one child gave no report.

Standardized test data are presented in the following table:

Date	October 1965	February 1967	March 1967	April 1967	Gain	Time Interval*
Grade Placement	(2.1)	(3.6)	(3.7)	(3.8)		
Stanford Word Meaning	1.5		3.0		1.5	16 months
Stanford Paragraph Meaning	1.6		2.8		1.2	16 months
Gates-MacGinitie Vocabulary		2.6		3.0	.4	2 months
Gates-MacGinitie Comprehension		2.7		3.0	.3	2 months

*Based on a school year of 10 months

Whereas this group was 0.6 years behind in Word Meaning and 0.5 years behind in Paragraph Meaning at the start of Grade 2, the gap between grade placement and mean performance in grade equivalent has not materially widened in a two-year period. The Gates-MacGinitie data suggest that the trend of falling progressively further behind grade level has been reversed.

Discussion

Confounded in these results are the joint effects of concrete rewards and individual attention. The combined effects are clear, however. This program succeeded both in getting children to read books and in having them achieve greater than expected gains on standardized tests.

II. Instructional Principle

Bring appropriate real-life models into the school setting.

School

Holmes (Milwaukee), Grade 1

Procedure

Sixth-grade pupils were randomly selected to serve as arithmetic helpers to randomly selected first graders. Older and younger pupils shared a common socio-economic background, since they attended the same neighborhood school.

First graders had the usual arithmetic instruction four days a week. On the fifth day they played number games and manipulated concrete arithmetic materials in a learning center with the sixth-grade helper.

Sixth graders were briefed by the Unit leader on ways of helping the younger children. Games and devices were created by the sixth graders to help the first graders.

Data Gathered

A teacher-constructed arithmetic test was administered to all first graders at the conclusion of the experiment. A self-concept inventory was administered to all sixth graders at the conclusion of the experiment.

Results

First-grade experimental pupils performed significantly better in arithmetic than did control pupils.

No significant differences on the self-concept instrument were found between sixth-grade models and non-models.

Implications

The data support the conclusion that older children serve as effective models for younger children of the same ethnic background. Were models selected on a basis other than random, and were pairings of older and younger children nonrandom, even stronger results (in terms of the level of significance) might be obtained.